

Takayuki ABE et al., S.N. 10/575,159
Page 4

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Dkt. 1141/76067

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Listing of Claims

The following listing of claims will replace all prior versions, and listings, of claims in the subject application:

Claims 1-17 (canceled).

18. (currently amended) A magnetic resonance imaging system comprising:
- static magnetic field generating means for applying a static magnetic field to an object to be examined;
 - gradient magnetic field generating means for applying a gradient magnetic field;
 - RF magnetic field transmitting means for irradiating, to nuclear spins within said object, RF magnetic field pulses to cause nuclear magnetic resonance of the nuclear spins;
 - an echo signal receiving means for detecting an echo signal emitted by the nuclear magnetic resonance;
 - pulse sequence control means for controlling a pulse sequence including at least one imaging parameter of a repetition time TR and executed to receive the echo signal;
 - signal processing means for reconstructing an image of a blood vessel by using the echo signal detected by said echo signal receiving means; and
 - display means for displaying said blood vessel image,
- wherein, during execution of said pulse sequence, said pulse sequence control means changes a value of the at least one imaging parameter of said repetition time TR in said pulse sequence depending on a concentration of a contrast agent, such that the repetition time has a shorter value during a higher concentration period than a value during a lower concentration

Takayuki ABE et al., S.N. 10/575,159
Page 5

Dkt. 1141/76067

period, which has been injected into said object, in said blood vessel.

19. (previously presented) The magnetic resonance imaging system according to claim 18, wherein

said signal processing means estimates the concentration of the contrast agent based on information regarding changes in the concentration of the contrast agent, the information being obtained in advance, and

said pulse sequence control means changes the value of said repetition time and takes said blood vessel image in accordance with a predicted value of the concentration of the contrast agent.

20. (original) The magnetic resonance imaging system according to claim 19, further comprising an input unit for receiving an input to instruct start of the imaging of said blood vessel image, wherein

said pulse control means successively takes monitoring images including said blood vessel,

said display means successively displays said monitoring images, and

said pulse sequence control means switches over the imaging from said monitoring images to said blood vessel image in accordance with the start instruction.

21. (original) The magnetic resonance imaging system according to claim 18, further comprising contrast agent injecting means, said contrast agent being injected by said contrast agent injecting means.

Takayuki ABE et al., S.N. 10/575,159
Page 6

Dkt. 1141/76067

Claims 22 and 23 (canceled).

24. (previously presented) The magnetic resonance imaging system according to claim 18, wherein said pulse sequence control means sets a first period and a second period depending on the concentration of the contrast agent, and said imaging parameter has different values during said first period and said second period, respectively.

25. (previously presented) The magnetic resonance imaging system according to claim 24, wherein said pulse sequence control means selects at least two imaging parameters including said repetition times, and a different imaging parameter is selected for said first period and said second period, respectively.

26. (previously presented) The magnetic resonance imaging system according to claim 25, wherein said pulse sequence control means changes a value of a first imaging parameter during said first period, and a value of a second imaging parameters is changed during said second period.

27. (previously presented) The magnetic resonance imaging system according to claim 24, wherein said first period is a concentration increasing period until a time at which the concentration of the contrast agent is peaked, and said second period is a concentration decreasing period after the time at which the concentration of the contrast agent is peaked.

Takayuki ABE et al., S.N. 10/575,159
Page 7

Dkt. 1141/76067

28. (previously presented) The magnetic resonance imaging system according to claim 26, wherein

said first period is a higher concentration period in which the concentration of the contrast agent is not lower than a threshold, including the time at which the concentration of the contrast agent is peaked, and

said second period is a lower concentration period in which the concentration of the contrast agent is lower than the threshold.

29. (previously presented) The magnetic resonance imaging system according to claim 27, wherein

said pulse sequence is a gradient echo pulse sequence including a flip angle and said repetition time as said imaging parameters,

said pulse sequence control means changes a value of at least one of the flip angle and the repetition time,

the flip angle is increased following a concentration increase during said concentration increasing period and reduced following a concentration decrease during said concentration decreasing period, and

the repetition time is reduced following the concentration increase during said concentration increasing period and increased following the concentration decrease during said concentration decreasing period.

30. (currently amended) The magnetic resonance imaging system according to claim 28, wherein said pulse sequence is a gradient echo pulse sequence including a flip angle and said

Takayuki ABE et al., S.N. 10/575,159
Page 8

Dkt. 11-41/76067

repetition time as said imaging parameters,

said first imaging parameter is one of the flip angle and the repetition time, and said second imaging parameter is the other,

said pulse sequence control means sets the flip angle such that the flip angle has a larger value during said higher concentration period than a value during said lower concentration period, and

said pulse sequence control means sets the repetition time ~~such that the repetition time has a shorter value during said higher concentration period than a value during said lower concentration period.~~

31. (previously presented) The magnetic resonance imaging system according to claim 30, wherein said pulse sequence control means changes the value of said first imaging parameter in opposite directions before and after the peak time, monotonously increasing or reducing the value of said second imaging parameter.

32. (previously presented) The magnetic resonance imaging system according to claim 29, wherein said pulse sequence control means changes the flip angle such that the flip angle becomes an Ernst's angle, changing the repetition time such that the flip angle becomes an Ernst's angle.

33. (previously presented) The magnetic resonance imaging system according to claim 18, wherein said displaying means displays statistic values obtained based on values resulting from changing the value of said imaging parameters.

Takayuki ABE et al., S.N. 10/575,159
Page 9

Dkt. 1141/76067

34. (previously presented) The magnetic resonance imaging system according to claim 18, wherein said pulse sequence control means obtains data regarding a central portion of a k-space near a time at which the concentration of the contrast agent is peaked.

35. (previously presented) The magnetic resonance imaging system according to claim 18, wherein said pulse sequence control means repeats said pulse sequence to obtain at least two images, and said blood vessel image is obtained from difference between said two images.

36. (previously presented) The magnetic resonance imaging system according to claim 18, wherein said pulse sequence control means obtains information regarding changes in the concentration of the contrast agent in said blood vessel,

changing the value of said imaging parameter in accordance with the concentration change information.

37. (previously presented) The magnetic resonance imaging system according to claim 18, wherein said pulse sequence control means successively takes monitoring images of said desired region including said blood vessel when a signal representing information regarding the concentration of the contrast agent in said blood vessel is extracted from said monitoring images and said extracted signal exceeds a predetermined value.

38. (previously presented) The magnetic resonance imaging system according to claim 18, wherein said pulse sequence control means changes values of different kinds of imaging

Takayuki ABE et al., S.N. 10/575,159
Page 10

Dkt. 11-41/76067

parameters during the imaging.

39. (previously presented) The magnetic resonance imaging system according to claim 18, wherein said pulse sequence control means modifies a manner of changing the value of said imaging parameter during the imaging.

40. (previously presented) The magnetic resonance imaging system according to claim 30, wherein said pulse sequence control means changes the flip angle such that the flip angle becomes an Ernst's angle, changing the repetition time such that the flip angle becomes an Ernst's angle.

41. (previously presented) The magnetic resonance imaging system according to claim 31, wherein said pulse sequence control means changes the flip angle such that the flip angle becomes an Ernst's angle, changing the repetition time such that the flip angle becomes an Ernst's angle.